CLAIMS

1. A peptide of any one of (1) to (4) below:

(1) a peptide consisting essentially of the amino acid sequence represented by SEQ ID NO: 1

(2) a peptide consisting essentially of the amino acid sequence represented by SEQ ID NO: 2

(3) a mutant peptide consisting essentially of an amino acid sequence derived from the amino acid sequence represented by SEQ ID NO:1 by addition, deletion or substitution of one or more amino acids, the peptide being capable of forming a complex with an HLA-A2402 molecule to be recognized by HLA-A2402-restricted cytotoxic T lymphocytes or induce such lymphocytes

(4) a mutant peptide consisting essentially of an amino acid sequence derived from the amino acid sequence represented by SEQ ID NO:2 by addition, deletion or substitution of one or more amino acids, the peptide being capable of forming a complex with an HLA-A2402 molecule to be recognized by HLA-A2402-restricted cytotoxic T lymphocytes or induce such a lymphocytes.

2. A peptide of either (1) or (2):

(1) a peptide consisting essentially of the amino acid sequence represented by SEQ ID NO: 1

(2) a peptide consisting essentially of the amino acid sequence represented by SEQ ID NO: 2.

3. A cancer vaccine comprising the peptide of claim 1 or 2 as an active ingredient.

4. A cancer vaccine of claim 3, wherein the cancer is an epithelial cancer.

5. A cancer vaccine of claim 3 or 4, wherein the cancer is selected from the group consisting of large intestinal cancers, lung cancers, breast cancers, gastric cancers, buccal cancers,

pancreatic cancers, esophagal cancers, nasopharyngeal cancers, uterine cancers, prostate cancers, and gallbladder cancers.

6. A cancer vaccine of any one of claims 3 to 5 which is used for a human having HLA-A2402 as a leukocyte antigen.

7. A cytotoxic T lymphocyte inducer comprising the peptide of claim 1 or 2 as an active ingredient.

8. A cytotoxic T lymphocyte inducer of claim 7 which is used for human having HLA-A2402 as a leukocyte antigen.

9. A polynucleotide of any one of (5) to (8) below:

(5) a polynucleotide consisting essentially of the base sequence represented by SEQ ID NO:10

(6) a polynucleotide consisting essentially of the base sequence represented by SEQ ID NO:11

(7) a mutant polynucleotide that hybridizes with a polynucleotide consisting of the base sequence represented by SEQ ID NO:10 under stringent conditions, and coding for a peptide capable of forming a complex with an HLA-A2402 molecule to be recognized by HLA-A2402-restricted cytotoxic T lymphocytes or induce such lymphocytes

(8) a mutant polynucleotide that hybridizes with a polynucleotide consisting of the base sequence represented by SEQ ID NO: 11 under stringent conditions, and being capable of forming a complex with an HLA-A2402 molecule to be recognized by HLA-A2402-restricted cytotoxic T lymphocytes or induce such lymphocytes.

10. A gene therapy drug for an epithelial cancer comprising the polynucleotide of claim 9 as an active ingredient.

11. A recombinant vector comprising the polynucleotide of claim 9.

12. A transformant wherein the recombinant vector of claim 11 is introduced.

13. A process for producing the peptide of claim 1 or 2, comprising the steps of cultivating the transformant of claim 12, and collecting the peptide of claim 1 or 2 from the culture.

14. An antigen-presenting cell which was pulsed with the peptide of claim 1 or 2 is pulsed.

15. A cancer vaccine comprising the antigen-presenting cell of claim 14 as an active ingredient.

16. A cancer vaccine of claim 15, wherein the cancer is an epithelial cancer.

17. A cancer vaccine of claim 15 or 16, wherein the cancer is selected from the group consisting of large intestinal cancers, lung cancers, breast cancers, gastric cancers, buccal cancers, pancreatic cancers, esophagal cancers, nasopharyngeal cancers, uterine cancers, prostate cancers, and gallbladder cancers.

18. A cancer vaccine of any one of claims 15 to 17 which is used for a human having HLA-A2402 as a leukocyte antigen.

19. A cytotoxic T lymphocyte inducer comprising the antigen-presenting cell of claim 14 as an active ingredient.

20. A cytotoxic T lymphocyte inducer of claim 19 which is used for treating a human having HLA-A2402 as a leukocyte antigen.

21. A major histocompatibility antigen complex comprising a major histocompatibility antigen, and the peptide of claim 1 or 2 or the tumor antigen epitope peptide present on the antigen-

presenting cell of claim 14.

22. A major histocompatibility antigen complex of claim 21 comprising an HLA-A2402 molecule, a β2-microgloblin, and the peptide of claim 1 or 2 or the tumor antigen epitope peptide present on the antigen-presenting cell of claim 14.

23. A cancer vaccine comprising the major histocompatibility antigen complex of claim 21 or 22 as an active ingredient.

24. A cancer vaccine of claim 23, wherein the cancer is an epithelial cancer.

25. A cancer vaccine of claim 23 or 24, wherein the cancer is selected from the group consisting of large intestinal cancers, lung cancers, breast cancers, gastric cancers, buccal cancers, pancreatic cancers, esophagal cancers, nasopharyngeal cancers, uterine cancers, prostate cancers, and gallbladder cancers.

26. A cancer vaccine of any one of claims 23 to 25, which is used for treating a human having HLA-A2402 as a leukocyte antigen.

27. A cytotoxic T-lymphocyte inducer comprising the major histocompatibility antigen complex of claim 21 or 22 as an active ingredient.

28. A cytotoxic T lymphocyte inducer of claim 27 which is used for treating a human having HLA-A2402 as a leukocyte antigen.

29. A major histocompatibility antigen complex tetramer comprising a major histocompatibility antigen and the peptide of claim 1 or 2 or the tumor antigen epitope peptide present on the antigen-presenting cell of claim 14.

30. A cytotoxic T lymphocyte which is obtained by stimulating

peripheral blood lymphocytes using one or more of (a) to (d) below:

(e) the peptide of claim 1 or 2

(f) the antigen-presenting cell of claim 14

(g) the major histocompatibility antigen complex of claim 21 or 22

(h) the major histocompatibility antigen complex tetramer of claim 29.

31. A cytotoxic T lymphocyte of claim 30 which is obtained by the steps of forming a complex between a major histocompatibility antigen complex and/or a tetramer thereof and a cytotoxic T lymphocyte by stimulating peripheral blood lymphocytes using one or more of (a) to (d) defined in claim 30, and isolating the cytotoxic T lymphocyte from the complex.

32. A passive immunotherapy drug comprising the cytotoxic T lymphocyte of claim 30 or 31 as an active ingredient.

33. A passive immunotherapy drug of claim 32, wherein the cancer is an epithelial cancer.

34. A passive immunotherapy drug of claim 32 or 33, wherein the cancer is selected from the group consisting of large intestinal cancers, lung cancers, breast cancers, gastric cancers, buccal cancers, pancreatic cancers, esophagal cancers, nasopharyngeal cancers, uterine cancers, prostate cancers, and gallbladder cancers.

35. A passive immunotherapy drug of any one of claims 32 to 34 which is used for a human having HLA-A2402 as a leukocyte antigen.

36. A method of quantifying HLA-A2402-restricted cytotoxic T lymphocytes in peripheral blood, comprising the steps of

making one or more of the following (a) to (d) act on

peripheral blood:

(a) the peptide of claim 1 or 2

(b) the antigen-presenting cell of claim 14

(c) the major histocompatibility antigen complex of claim 21 or 22

(d) the major histocompatibility antigen complex tetramer of claim 29, and

quantifying cytotoxic T lymphocytes in peripheral blood or cytokine produced by such cytotoxic lymphocytes.

37. A cancer treatment and/or amelioration method comprising administrating one or more of the following (a) to (d) to a human having HLA-A2402 as a leukocyte antigen:

(a) the peptide of claim 1 or 2

(b) the antigen-presenting cell of claim 14

(c) the major histocompatibility antigen complex of claim 21 or 22

(d) the major histocompatibility antigen complex tetramer of claim 29.

38. A cancer treatment or amelioration method comprising the steps of collecting mononuclear cell fraction from peripheral blood of a human patient having HLA-A2402 as a leukocyte antigen,

culturing the mononuclear cell fraction with one or more of the following (a) to (d):

(a) the peptide of claim 1 or 2

(b) the antigen-presenting cell of claim 14

(c) the major histocompatibility antigen complex of claim 21 or 22

(d) the major histocompatibility antigen complex tetramer of claim 29, and

returning to the patient's blood the mononuclear cell fraction in which cytotoxic T lymphocytes are induced and/or activated.

39. A method of inducing cytotoxic T lymphocytes comprising administrating one or more of the following (a) to (d) to a human having HLA-A2402 as a leukocyte antigen:

(a) the peptide of claim 1 or 2

(b) the antigen-presenting cell of claim 14

(c) the major histocompatibility antigen complex of claim 21 or 22

(d) the major histocompatibility antigen complex tetramer of claim 29.

40. A cancer treatment or amelioration method comprising administrating the cytotoxic T lymphocyte of claim 30 or 31 to a human having HLA-A2402 as a leukocyte antigen.

41. A major histocompatibility antigen complex tetramer of claim 21, wherein the tetramer is a complex comprising an HLA-A2402 molecule, a β2 microgloblin, and the peptide of claim 1 or 2 or the tumor antigen epitope peptide present on the antigen-presenting cell of claim 14.

42. A cancer vaccine comprising the histocompatibility antigen complex tetramer of claim 41 as an active ingredient.

43. A cancer vaccine of claim 42, wherein the cancer is an epithelial cancer.

44. A cancer vaccine of claim 42 or 43, wherein the cancer is selected from the group consisting of large intestinal cancers, lung cancers, breast cancers, gastric cancers, buccal cancers, pancreatic cancers, esophagal cancers, nasopharyngeal cancers, uterine cancers, prostate cancers, and gallbladder cancers.

45. A cancer vaccine of any one of claims 42 to 44 which is useful for treating human having HLA-A2402 as a leukocyte antigen.

46. A cytotoxic T lymphocyte inducer comprising the major histocompatibility antigen complex tetramer of claim 41.

47. A cytotoxic T lymphocyte inducer of claim 46 which is useful for treating human having HLA-A2402 as a leukocyte antigen.